

CLAIMS

SUBA 1. A multi-channel digital data sending-out apparatus comprising:

management means for supervising the information of an information source;
programming means for supervising the information of the material being sent
and programming the progress of data to be sent out;

registering means for registering the information of the materials to be sent out;

holding means for holding a plurality of said materials;

sending-out means for sending out the plural materials held by said holding
means to a transmission path as a multi-channel digital data; and holding means for
holding a plurality of said materials; and

connection means for interconnecting said management means, programming
means, registering means, holding means and the sending-out means to permit each of
these means to access an other of said means.

2. The multi-channel digital data sending-out apparatus according to claim 1 wherein
said sending-out means comprises

first sending-out means for doing sending processing;

second sending-out means for doing sending processing; and

switching means for switching one of the first sending-out means or the second
sending-out means to the other if said one of the sending-out means is in disorder.

3. The multi-channel digital data sending-out apparatus according to claim 1 further
comprising:

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send-out management means for supervising sending-out of multi-channel digital data; and

multi-channel monitoring means for monitoring sending-out of the multi-channel digital data.

4. The multi-channel digital data sending-out apparatus according to claim 1 further comprising:

conversion means for converting the format of the plural materials held by said holding means into a transmission format by software and for multiplexing the time information, service identification information and the service management information thereon to generate a stream which is outputted.

5. The multi-channel digital data sending-out apparatus according to claim 4 wherein said conversion means includes

auxiliary holding means for holding, for assurance sake, at least two-day installments of the materials, progress information and the system configuration held by said holding means.

6. The multi-channel digital data sending-out apparatus according to claim 5 wherein said system configuration is updated using a portion of the file name thereof.

7. The multi-channel digital data sending-out apparatus according to claim 4 wherein said conversion means includes

current operating system conversion means in an actually working state and

stand-by conversion means worked in substitution for said current operating

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system conversion means in case of malfunctioning thereof.

8. A multi-channel digital data sending-out method comprising:

- a management step for supervising the information of an information source;
- a programming step for supervising the information of the material being sent and programming the progress of the data to be sent out;
- a registering step for registering the information of the material to be sent out;
- a holding step for holding a plurality of said materials;
- a sending-out step for sending out the plural materials held by said holding means to a transmission path as multi-channel digital data; and
- a connection step for interconnecting the processing operations of said management step, programming step, registering step, holding step and the sending-out step so that the processing operation at each of said steps will be associated with the processing operation at an other of said steps.

9. A multi-channel digital data sending-out apparatus comprising:

- holding means for holding a plurality of materials to be sent out;
- reproducing means for reading out and reproducing the materials held by said holding means;
- encoding means for real-time encoding the materials reproduced by said reproducing means;
- conversion means for converting the format of said plural materials held by said holding means or the plural materials encoded in real-time by said encoding

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sending-out means for sending out the materials converted by said conversion means to the transmission path as multi-channel digital data; and

10. The multi-channel data sending-out apparatus according to claim 9 wherein said conversion means multiplexes the time information, service identification information and the service management information on said materials into a sole stream.

a holding step for holding a material to be sent out;

a reproducing step for reading out and reproducing the material held by said

an encoding step for real-time encoding the material reproduced by said

a conversion step for converting the format of said plural materials held by

a sending-out step for sending out the materials converted by said conversion

a connection step for interconnecting the processing operations of said holding

step, reproducing step, encoding step, conversion step, and the sending-out step so that the processing operation at each of said steps will be associated with the processing operation at an other of said steps.

12. A multi-channel digital data sending-out apparatus comprising:

holding means for holding a plurality of materials to be sent out;

conversion means for converting the format of said plural materials held by said holding means into a format for transmission;

a sending-out step for sending out the materials converted by said conversion step to the transmission path as multi-channel digital data;

monitoring means for monitoring materials read out from said holding means, materials converted by said conversion means or materials sent out by said sending-out means; and

supplying means for supplying the materials read out from said holding means, materials converted by said conversion means or materials sent out by said sending-out means.

13. The multi-channel digital data sending-out apparatus according to claim 12 wherein said monitoring means further monitors said materials transmitted to the transmission path from said sending-out means, received and demodulated.

14. The multi-channel digital data sending-out apparatus according to claim 12 wherein said monitoring means includes detection means for detecting the level of each material.

15. The multi-channel digital data sending-out apparatus according to claim 14 wherein said detection means issues an alarm if said materials substantially are not monitored for longer than a predetermined period.

16. The multi-channel digital data sending-out apparatus according to claim 12 wherein said sending-out means comprises

first sending-out means for doing sending-out processing;

second sending-out means for doing sending-out processing; and

switching means for switching one of the first sending-out means or the second sending-out means to the other if said one of the sending-out means is in disorder.

17. The multi-channel digital data sending-out apparatus according to claim 16 wherein said monitoring means includes a switch for selecting materials to be monitored, said switch being controlled responsive to switching by said switching means.

18. The multi-channel digital data sending-out apparatus according to claim 12 wherein said monitoring means for monitoring the material converted by said conversion means displays the information concerning a material converted based on a progress table by said conversion means and sent out and a material which is to be converted and sent out.

19. The multi-channel digital data sending-out apparatus according to claim 12 further comprising:

reproducing means for reproducing a material transmitted from said sending-out

means to the transmission path and designated on the progress table.

20. A multi-channel digital data sending-out method comprising:

a holding step for holding a plurality of materials to be sent out;

a conversion step for converting the format of said plural materials held by said holding step into a format for transmission;

a sending-out step for sending out the materials converted by said conversion step to the transmission path as multi-channel digital data;

a monitoring step for monitoring materials read out from said holding step, materials converted by said conversion step or materials sent out by said sending-out step; and

a supplying step for supplying the materials read out from said holding step, materials converted by said conversion step or materials sent out by said sending-out step.

21. A multi-channel digital data sending-out apparatus comprising:

programming means for supervising the information of a material to be sent out, programming the data to be sent out as to its progress and for generating the progress information;

holding means for holding the information on the materials, the progress information and any other information necessary for sending out the materials;

conversion means for converting the format of the plural materials into a format for transmission;

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sending-out means for sending out the plural materials converted by said conversion means to the transmission path as multi-channel digital data; and

monitoring means for monitoring said programming means, conversion means or said sending-out means as to malfunctioning thereof so that the information held by said holding means and which is currently required will be supplied to said programming means, conversion means or said sending-out means.

22. The multi-channel digital data sending-out apparatus according to claim 21 wherein said sending-out means comprises

first sending-out means for doing sending processing;

second sending-out means for doing sending processing; and

switching means for switching one of the first sending-out means or the second sending-out means to the other if said one of the sending-out means is in disorder.

23. The multi-channel digital data sending-out apparatus according to claim 22 wherein said first sending-out means and the second sending-out means monitor each other so that, if one of the first sending-out means and the second sending-out means is in disorder, the other advises said monitoring means of that effect.

24. The multi-channel digital data sending-out apparatus according to claim 22 wherein, one of said first sending-out means or the second sending-out means that is actually operating advises said holding means in a pre-set manner.

25. The multi-channel digital data sending-out apparatus according to claim 21 wherein said conversion means is made up of a current operating system converting

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means in an actually working state and

stand-by exchanging means worked in substitution for said current operating system converting means in case of malfunctioning thereof.

26. The multi-channel digital data sending-out apparatus according to claim 21 wherein said conversion means includes auxiliary holding means for holding, for assurance sake, at least one-day installment of the information held by said holding means.

27. A multi-channel data sending-out method comprising:

a programming step for supervising the information of a material to be sent out, programming the data to be sent out as to its progress and for generating the progress information;

a holding step for holding the information on the materials, the progress information and any other information necessary for sending out the materials;

a conversion step for converting the format of the plural materials at said holding step into a format for transmission;

a sending-out step for sending out the plural materials converted by said conversion means to the transmission path as multi-channel digital data; and

a monitoring step for monitoring errors in said steps so that, if errors occur in the processing in any of the above steps, the information held in said holding step and which is currently required will be presented for and utilized in processing in each of said steps.

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28. An information programming apparatus comprising:

decision means for deciding plural information items to be sent out within a pre-set time;

setting means for setting at least one of an upper limit value or a lower limit value of an interval time duration between one information item and another information item;

calculating means for calculating a uniform interval time duration from the playback time of the information, number of the interval time durations and the sending-out time; and

comparison means for comparing the results of calculations by said calculation means to the upper or lower limit value as set by said setting means.

29. The information programming apparatus according to claim 28 wherein said comparison means presents the length of the information item satisfying the upper or lower limit value based on the results of comparison.

30. An information programming method comprising:

a decision step for deciding plural information items to be sent out within a pre-set time;

a setting step for setting at least one of an upper limit value or a lower limit value of an interval time duration between one information item and another information item;

a calculating step for calculating a uniform interval time duration from the

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playback time of the information, number of the interval time durations and the sending-out time; and

a comparison step for comparing the results of calculations by said calculation step to the upper or lower limit value as set by said setting means.

31. A multi-channel digital data management apparatus comprising:

holding means for holding a plurality of materials to be sent;

sending-out means for sending out the plural materials held on said holding means to a transmission path as multi-channel digital data;

setting means for setting archiving conditions;

detection means for detecting, from the plural materials held by said holding means, the materials satisfying the conditions set by said setting means;

means for archiving the materials detected by said detection means; and

means for interconnecting said holding means, sending-out means, setting means, detection means, and the archiving means.

32. The multi-channel digital data management apparatus according to claim 31 further comprising:

designating means for designating from the materials detected by said detecting means, those materials which are to be archived or deleted.

33. The multi-channel digital data management apparatus according to claim 31 further comprising:

management means for supervising a progress table of said plural materials to

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be sent out, said management means causing the archived material to be re-held by said holding means when the archived material is again used on said progress table.

34. A multi-channel digital data management method comprising:

a holding step for holding a plurality of materials to be sent;

a sending-out step for sending out the plural materials held on said holding step to a transmission path as multi-channel digital data;

a setting step for setting archiving conditions;

a detection step for detecting, from the plural materials held by said holding step, the materials satisfying the conditions set by said setting step;

a step for archiving the materials detected by said detection step; and

a step for interconnecting said holding step, sending-out step, setting step, detection step and the archiving step so that a processing operation by each of the said steps will be associated with the processing operation by other steps.

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